

Chromosome numbers in species of *Grindelia* (Asteraceae, Astereae) from the Meseta del Somuncura (Patagonia, Argentina)

A. BARTOLI¹ & R. D. TORTOSA^{1,2}

¹Laboratorios de Botánica "L. R. Parodi", Facultad de Agronomía,
Universidad de Buenos Aires, Av. San Martín 4453, 1417 Buenos Aires, Argentina

²Consejo Nacional de Investigaciones Científicas y Técnicas, Argentina

Abstract

Diploid chromosome numbers ($2n = 12$) for *Grindelia coronensis* A. BARTOLI & TORTOSA and *G. pygmaea* CABR. are reported for the first time. Somatic chromosome morphology for both species is described. The karyotype ($2n = 12$) is composed by $6m+4st+2st-sat$. The achene morphology of *G. pygmaea* is communicated for the first time.

Resumen

Se citan por primera vez el número cromosómico diploide de *Grindelia coronensis* A. BARTOLI & TORTOSA ($2n = 12$) y de *G. pygmaea* CABR. ($2n = 12$). Se describe la morfología de los cromosomas somáticos para ambas especies, cuyo cariotipo está compuesto por $2n=12=6m+4st+2st-sat$. Además, se comunica por primera vez la morfología de los aquenios de *G. pygmaea*.

Introduction

Grindelia WILLD., a New World genus, is a member of the tribe Astereae with ca. 60 species. In South America the genus is represented by 26 species distributed in Argentina, Bolivia, southern Brazil, Chile, Paraguay and Uruguay. Four species of *Grindelia* live in the Meseta del Somuncura, a vast basaltic plateau, located in northeastern Patagonia: *G. chiloensis* (CORN.) CABR., *G. coronensis* A. BARTOLI & TORTOSA, *G. patagonica* A. BARTOLI & TORTOSA, and *G. pygmaea* CABR. The last species and *G. coronensis* are endemic to this region (BARTOLI & TORTOSA 2003). *G. coronensis* originally described from the Cerro Corona, was found later by us in the southern limit of the plateau (BARTOLI & TORTOSA 44/02-2, BAA) and we also found achenes of *G. pygmaea*, which had not been previously described.

The purpose of this paper is to report for the first time, the chromosome number and chromosome morphology of *Grindelia coronensis* A. BARTOLI & TORTOSA and *Grindelia pygmaea* CABR. and to describe the achene morphology of the latter species.

Methods and Materials

Mitotic chromosomes were studied in root-tip meristems which were pre-treated with 0.004 M 8-hydroxyquinoline at room temperature during 5 h and then fixed in ethanol-lactic acid 5:1. Feulgen staining was used after hydrolysis in 1 M HCl at 60° for 13 min. Chromosome designation follows the terminology recommended by LEVAN & al. (1964). Voucher specimens are deposited at BAA.

Results

Like all species of *Grindelia* investigated, *G. coronensis* and *G. pygmaea* have a basic chromosome number of $x=6$. Chromosome counts revealed the existence of diploid numbers ($2n=12$) in both species (Table 1), with three pairs of metacentric chromosomes (m) and three pairs of subtelocentric chromosomes (st), all of unequal size; the smallest pair with a satellite. The somatic chromosome number and the karyotype of *G. coronensis* and *G. pygmaea* are coincident with the chromosome characteristics found in other South American *Grindelia* species (BARTOLI & TORTOSA 1998).

As far as achene morphology is concerned, there are two different shapes in the genus *Grindelia*: subquadrate (occasionally winged in *G. cabreriae* ARIZA ESPINAR var. *alatocarpa* ARIZA ESPINAR) in North and South American species of *Grindelia* (e.g., *G. camporum* GREENE, *G. mendocina* A. BARTOLI & TORTOSA, *G. pulchella* DUNAL), and compressed and winged, only in South American species that belong to the *Grindelia chiloensis* complex (e.g., *G. coronensis* A. BARTOLI & TORTOSA, *G. patagonica* A. BARTOLI & TORTOSA, *G. chiloensis* (CORN.) CABR.). *Grindelia pygmaea* has subquadrate achenes, ca 2. mm long, straw-coloured.

Discussion

The similarity observed in the chromosome morphology of South American *Grindelia* species suggests that this character could be useful to analyse the relationship between the species of *Grindelia* of North and South America, as well as with the other genera of the *Xanthocephalum* Group (*Isocoma* NUTT., *Olivaea* SCHULTZ-BIP., *Rayjacksonia* HARTMAN & LANE, *Stephanodoria* GREENE, and *Xanthocephalum* WILLD.).

Acknowledgements

The authors acknowledge the support provided by the Myndel Botanica Foundation.

References

- BARTOLI, A. & R. D. TORTOSA 1998. Estudios cromosómicos en especies sudamericanas de *Grindelia* (Astereae, Asteraceae). *Kurtziana* 26: 165–171.
- BARTOLI, A. & R. D. TORTOSA 2003. A new species of *Grindelia* (Asteraceae, Astereae) from the Meseta del Somuncura (Patagonia), Argentina. *Brittonia* 55: 146–149.
- LEVAN, A., FREDGA, K. & A. A. SANDBERG 1964. Nomenclature for centromeric position on chromosomes. *Hereditas* 52: 201–220.

Table 1. Chromosome numbers in *Grindelia* (Asteraceae)

Taxon	Locality & collection number	Chromosome no. (2n)
<i>Grindelia coronensis</i> A. BARTOLI & TORTOSA	Argentina: Río Negro: Dpto. 9 de julio: Meseta del Somuncurá, Cerro Corona. 10 Jan 2002, BARTOLI & TORTOSA 39/02	12
<i>Grindelia pygmaea</i> CABR.	Argentina: Río Negro: Dpto. 9 de julio: Meseta del Somuncurá, 10 Jan 2002, BARTOLI & TORTOSA 54/02	12